

National Institute of Food And Agriculture

# To Advance Knowledge For Agriculture, the Environment, Human Health and Well-being, and Communities

USDA




# Overview

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) are competitive federal government programs that fund small businesses to develop innovative, high-risk technologies with the goal of increasing private sector commercialization and moving a technology to the marketplace

SBIR

# SBIR and STTR Program

- Started in 1983
- SBIR
  - All Federal agencies with more than $100 million in extramural R&D must set aside 2.9% of their extramural R&D funds for an SBIR program in 2015.
- STTR
  - Federal agencies with extramural R&D budgets that exceed $1 billion are required to set aside 0.4%
  - Cooperative R&D with businesses & research institutions (universities)

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# SBIR Program

- SBIR is an applied science technology transfer program
- 11 participating Federal agencies and total budget of >$2 billion
- Only US-owned, for-profit, small business firms located in the United States are eligible (<500 employees)
- The PI/PD must work a minimum of 51% for the small business firm during the period of the award

# Participating Agencies

- Department of Defense*
- National Institutes of Health *
- Department of Energy*
- National Science Foundation*
- Department of Agriculture (USDA)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)*

* Also has STTR

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# Participating Agencies (continued)

- Department of Homeland Security (DHS)
- Department of Transportation (DOT)
- Department of Education
- National Institute of Standards and Technology (NIST)
- National Oceanic and Atmospheric Administration (NOAA)

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# Features of USDA SBIR Program

- Only Award Grants - Ideas are Investigator-Initiated
- Awards Based on Scientific and Technical Merit, PI and Company Qualifications, and Commercial Potential
- Phase I Grants = 8 Months/$100,000
- Phase II Grants = 2 Years/$500,000
- 12 Month No-cost Extension Available

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# History of USDA SBIR Funding

| Year | Budget MM | Phase I | Phase II |
|---|---|---|---|
| 2004 | 18.18 | 99/582 | 38/65 |
| 2005 | 19.20 | 93/557 | 40/79 |
| 2006 | 19.17 | 97/650 | 32/61 |
| 2007 | 18.20 | 81/510 | 39/71 |
| 2008 | 18.30 | 77/454 | 38/69 |
| 2009 | 19.71 | 73/350 | 33/53 |
| 2010 | 22.26 | 91/537 | 39/62 |
| 2011 | 19.20 | 56/508 | 37/72 |
| 2012 | 19.30 | 63/451 | 25/50 |
| 2013 | 18.41 | 59/518 | 28/52 |
| 2014 | 21.61 | 74/479 | 24/47 |

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# Geographical Distribution Of USDA SBIR Winners FY83- FY14

| CA | | W | | NE | | NC | | S | |
|---|---|---|---|---|---|---|---|---|---|
| CA | 389 | WA | 146 | MA | 157 | MI | 118 | TX | 112 |
| | | CO | 144 | NY | 119 | WI | 97 | VA | 91 |
| | | OR | 99 | PA | 95 | OH | 83 | NC | 85 |
| | | HI | 104 | MD | 76 | MN | 63 | FL | 69 |
| | | ID | 62 | ME | 54 | KS | 68 | GA | 42 |
| | | MT | 52 | NJ | 60 | IN | 63 | LA | 33 |
| | | AZ | 47 | CT | 49 | IA | 76 | AR | 41 |
| | | WY | 49 | VT | 24 | IL | 43 | TN | 34 |
| | | NM | 39 | DE | 29 | MO | 46 | OK | 33 |
| | | UT | 26 | NH | 17 | ND | 31 | MS | 19 |
| | | AK | 16 | DC | 7 | NE | 27 | SC | 20 |
| | | NV | 11 | RI | 7 | SD | 33 | AL | 20 |
| | | | | WV | 6 | | | KY | 23 |
| | | | | | | | | VI | 1 |
| | | | | | | | | PR | 2 |
| 389 | | 795 | | 700 | | 748 | | 625 | |
| 13.5% | | 32.2% | | 27.3% | | 29.8% | | 23.7% | |

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# USDA SBIR Topic Areas

## Forests & Related Resources

***Address the health, diversity and productivity of the Nation's forests and grasslands through the development of environmentally sound approaches to increase productivity of forest lands, improve sustainability of forest resources, and develop value-added materials derived from woody resources.***

## Plant Production and Protection – Biology

***Enhancing crop production by applying biological approaches to, reduce the impact of harmful agents, develop new methods for plant improvement, and apply traditional plant breeding methods and new technologies to develop new food and non-food crop plants.***

## Animal Production and Protection

***Develops innovative, marketable technologies that will provide significant benefit to the production and protection of agricultural animals.***

## Air, Water and Soils

***Develops technologies for conserving and protecting air, water and soil resources while sustaining optimal farm and forest productivity.***

## Food Science and Nutrition

***Research focusing on developing new and improved processes, technologies, or services that address emerging food safety, food processing and nutrition issues.***

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# USDA SBIR Topic Areas

**Aquaculture**
***Develops new technologies that will enhance the knowledge and technology base necessary for the expansion of the domestic aquaculture industry as a form of production agriculture.***

**Biofuels and Biobased Products**
***Promotes the use of biofuels and non-food biobased products by developing new or improved technologies that will lead to increased production of industrial products from agricultural materials.***

**Rural and Community Development**
***Applications may be submitted for the development of new technology, or for the utilization of existing technology, that address important economic and social development issues or problems in rural America.***

**Plant Production and Protection – Engineering**
***Enhance crop production by creating and commercializing technologies that enhance system efficiency and profitability and that protect crops from pests and pathogens in economically and environmentally sound ways.***

**Small and Mid-Size Farms**
***The Small and Mid-Size Farms topic area aims to promote and improve the sustainability and profitability of small and mid-size farms and ranches (where annual sales of agricultural products are less than $250,000 for small farms and $500,000 for mid-size farms - hereafter referred to as small farms).***

# Technology Areas Supported by the USDA/SBIR Program

- Information Technology
- Robotics
- Electronics
- Biotechnology
- Nanotechnology
- Microelectro Mechanical Systems (MEMS)
- Acoustics
- Remote Sensing
- Genetic Engineering
- Material/Coatings
- Food Safety
- Biofuels
- Machine Vision
- Precision Agriculture
- Engineering
- Physics
- Chemistry

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# U.S. Department of Agriculture
## Small Business Innovation Research Program

**Dr. William Goldner**
Biofuels and Biobased Products

**Dr. Jodi Williams**
Food Science and Nutrition

**Dr. Kitty Cardwell**
Plant Production and Protection – Biology

**Dr. Denis Ebodaghe**
Small and Mid-Size Farms

**Scott Dockum**
Program Coordinator, SBIR

**Elden Hawkes**
Program Specialist, SBIR

**Dr. Charles Cleland**
Forests and Related Resources

**Dr. Gene Kim**
Aquaculture

**Mr. Brent Elrod**
Rural and Community Development

**Dr. Robert Smith**
Animal Production and Protection

**Dr. Charles Cleland**
Air, Water and Soils

**Dr. Kitty Cardwell**
Plant Production and Protection - Engineering

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# USDA SBIR REVIEW PROCESS

- Proposals are evaluated by confidential peer review using outside experts from non-profit organizations
  - Phase I: Panels plus ad-hoc reviewers
  - Phase II: Panels and ad-hoc reviewers
- Selection criteria include
  - Scientific/technical merit
  - Commercial potential
  - For Phase II: degree to which Phase I feasibility has been demonstrated
- Funds Allocated to Topic Areas in Proportion to Number of Proposals Received

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# USDA SBIR REVIEW PROCESS

- All Applicants Receive Verbatim Copies of Reviews
- Phase I applicants that were not selected for funding are able to reapply for Phase I funding during the next solicitation cycle.
- Phase II applicants are only able to apply one time.

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# University and Government Scientist Involvement in USDA SBIR Program

- Subcontracting to Universities and USDA Labs Permitted and Strongly encouraged
- Scientists may serve as consultants or receive a subcontract (limited to no more than 1/3 of Phase I award or 1/2 of Phase II award) and continue to work full time at their home institution
- Scientists may serve as the principal investigator on an SBIR grant, by reducing employment at their home institution to 49% for the duration of the grant and if the SBIR research is performed someplace other than their research lab
- It is usually not acceptable for university or government scientists to serve as consultants and have all the research done in their lab

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# Advice for Phase I

- Provide a **VISION** of where you want to be at the end of Phase II
- Focus the Phase I research on critical enabling factor(s)
- Sell the importance of your project
- Provide a detailed experimental plan
- Provide insight into commercial potential
- Show connectivity with the communities you are intending to serve

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# Factors that Improve Chances for Commercial Success

- High Scientific/Technical Merit
- Good Consultants, CRADA
- Business Expertise
- Phase III Partners
- Marketing Plan
- Participate in the Phase I and Phase II Commercialization Assistance Programs

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# USDA SBIR Assistance Opportunity's

- Offer Commercialization Assistance Programs at both Phase I and Phase II for SBIR Grantees.
- USDA SBIR staff works directly with the USDA Office of Technology Transfer (OTT) to transfer USDA developed technologies to the market place using small businesses.
  - The Agriculture Research Service (ARS) technology transfer program is delegated the authority to administer the patent and licensing program for all intramural research conducted by USDA.
  - Small Business's can work with SBIR and OTT staff to license a USDA based technology for the marketplace. http://www.ars.usda.gov/business/business.htm

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# Solicitation/Proposal Schedule:

Phase I

- FY 2016 Solicitation: Released June 2015
- Phase I Proposal Deadline: Planned October 8, 2015
- Panels will Meet in January & February of 2016
- Award Decisions will be Made in Early March 2016
- Phase I Grant Period will be from June 1, 2016 to January 31, 2017

Phase II

- FY 2016 Solicitation will be released in late November of 2015 (only prior USDA Phase I winners are eligible)
- Phase II Proposal Deadline Date will be February 2016
- Phase II Grant Period will be from September 1, 2016 to August 31, 2018

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# Application Submission

- Application Submission Requires Many Steps to Complete the Process
- Download the USDA SBIR Solicitation at http://www.nifa.usda.gov/funding/sbir/sbir.html
- Electronic Submission is Mandatory via Grants.gov
- Obtain Data Universal Number System (DUNS) Number
- Register with System for Award Management (SAM) (replaces Central Contractor Registry (CCR))
- Register your Business with Grants.gov
  - http://www.grants.gov/applicants/get_registered.jsp
- Register your company with the Small Business Administration (SBA)
  - https://www.sbir.gov/registration

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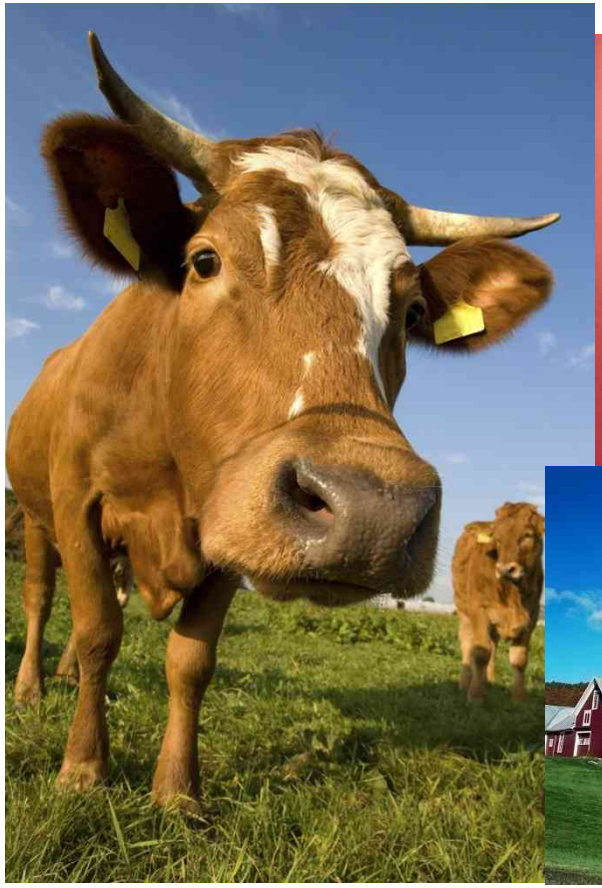
# USDA SBIR Success Stories



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# AgraQuest, Inc.

**Technology Developed**

- Fungicide called Serenade®
- Non toxic to animals and to beneficial organisms.
- Serenade® is approved for use in organic production.
- Use of Serenade® helps manage development of resistance to synthetic fungicides.

**Commercialization Success**

- Serenade® has been sold in more than 23 countries
- Sales of Serenade® have exceeded $23 million
- Bayer AG's CropScience acquired AgraQuest Inc. for approximately $500 million in July of 2012

**SBIR History**

- Phase I – 1997 ($65K)
- Phase II – 1998 ($250K)
- Company has had other Phase I and II projects with USDA SBIR
- 8.2 Plant Production and Protection - Biology

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# Altaeros Energies

**Technology Developed**

•Altaeros Buoyant Airborne Turbine (BAT) leverages proven aerospace technology to lift a wind turbine into the strong, consistent winds beyond the reach of traditional towers.

**Commercialization Success**

•First commercial products to be sold in 2015.

•Technology was featured in CNN's 2014 edition of THE CNN 10: Inventions and in the New York Times.

•Telecoms group SoftBank has invested $7m in Altaeros Energies for future deployment of the BAT technology in Japan.

**SBIR History**

•Phase I – 2011 ($150K)

•Phase II – 2012 ($140K)

•8.6 Rural Development


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# Whole Trees, LLC

**Technology Developed**

•Structural Testing of Branched Timber and Truss Assemblies

•Round timber can substitute for steel and concrete in medium and large scale construction under Type IV: "Heavy Timber Framing."

**Commercialization Success**

•The company will provide the ceiling joists of the 57,000-square-foot Festival Foods grocery store which will include ash trees being removed from the city of Madison due to emerald ash borer infestation.

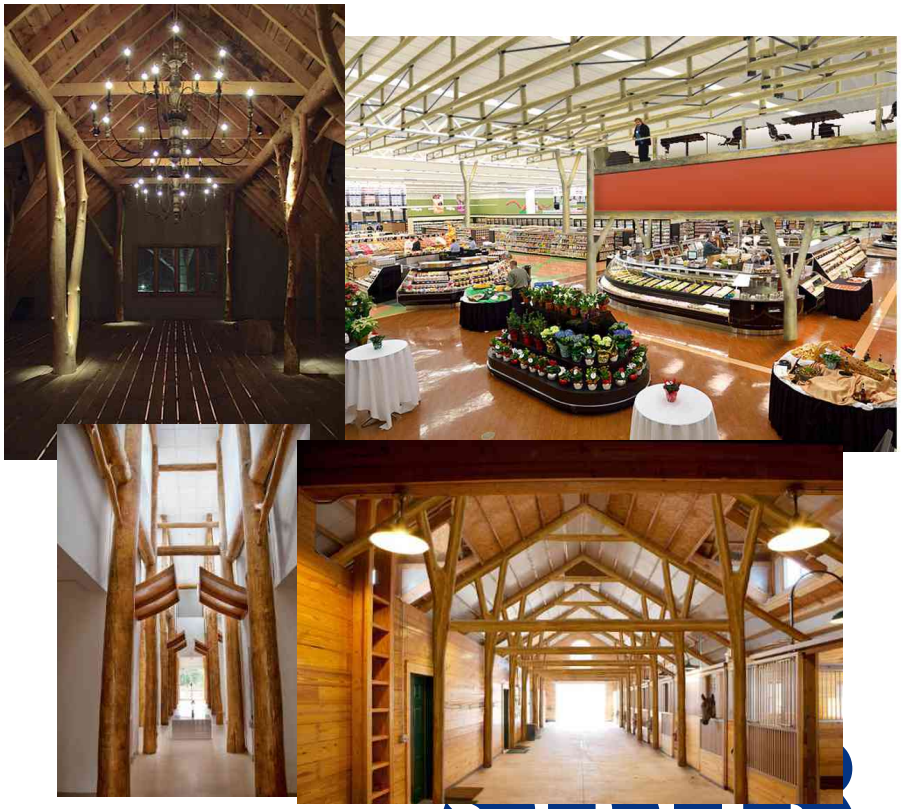
•Raised $1.6M in private equity funding since the initial SBIR grant.

**SBIR History**

•Phase I – 2011 ($99K)

•Phase II – 2012 ($362K)

•8.1 Forests and Related Resources



# Nitrate Elimination Company, Inc.

**Technology Developed**

•Developed nitrate test kits that allow farm managers to determine nitrate accumulation levels on the farm.
•This test kit will help agricultural producers manage nitrate concentrations, reduce costly nitrogen fertilizer applications, and protect the environment from pollution.

**SBIR History**

•Phase I – 2006 ($80K)
•Phase II – 2007 ($364K)
•8.4 Air, Water and Soils


**Commercialization Success**

•In the final stages to receive EPA certification as a standard method for all nitrate testing under the Clean Water Act.
•Nitrate test kits are used as the standard method within all US Geological Survey (USGS) soil laboratories.

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# USDA SBIR HOMEPAGE
# www.nifa.usda.gov/fo/sbir

- Program Information
- Solicitation (Request for Applications)
- Technical Abstracts
- Link to SBA and Other SBIR Programs

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# U.S. Department of Agriculture
## Small Business Innovation Research Program

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# ANY QUESTIONS?

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